

Multi-Channel Tunable Source for Atomic Sensors, Phase II

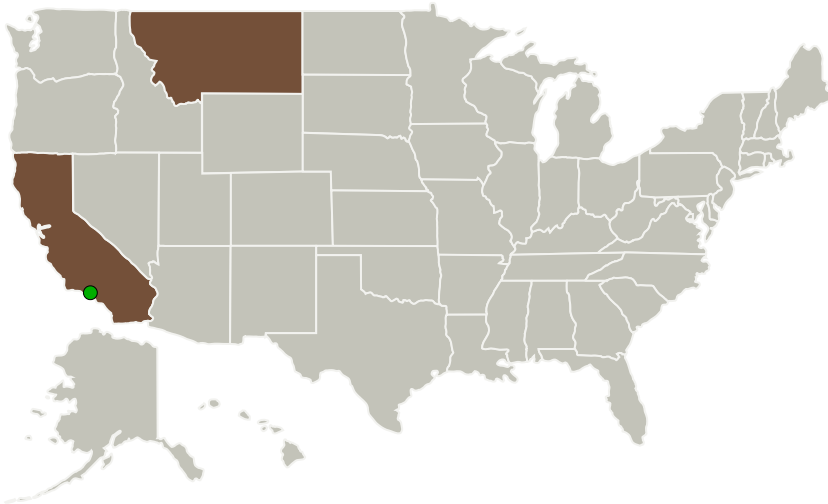
Completed Technology Project (2015 - 2018)




Project Introduction

This Phase II SBIR will seek to develop a prototype laser source suitable for atomic interferometry from compact, robust, integrated components. AdvR's design is enabled by capitalizing on robust, well-commercialized, low-noise telecom components with high reliability and declining costs which will help to drive the widespread deployment of this system. The key innovation is the combination of current telecom-based fiber laser and modulator technology with periodically-poled waveguide technology to produce tunable laser light at rubidium D1 and D2 wavelengths (and expandable to other alkalis) using second harmonic generation (SHG). With this technology, multiple channels can be independently tuned to produce the fields needed for addressing atomic states in atom interferometers and clocks. In addition, this technology could be useful in the development cold-atom inertial sensors and gyroscopes.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
ADVR, Inc.	Lead Organization	Industry	Bozeman, Montana
 Jet Propulsion Laboratory(JPL)	Supporting Organization	NASA Center	Pasadena, California



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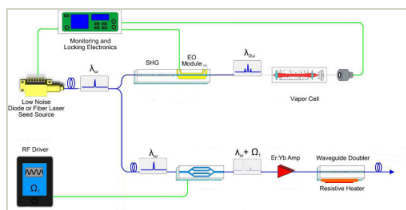


Primary U.S. Work Locations

California

Montana

Images



Briefing Chart

Multi-Channel Tunable Source for Atomic Sensors Briefing Chart
(<https://techport.nasa.gov/image/130915>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

ADVR, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Justin T Hawthorne

Co-Investigator:

Justin Hawthorne

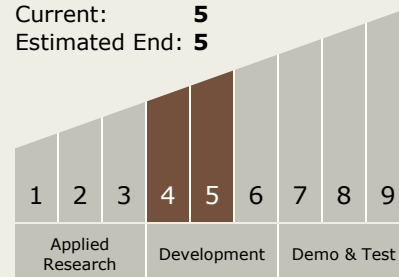
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Technology Maturity (TRL)

Start: **4**
Current: **5**
Estimated End: **5**



Technology Areas

Primary:

- TX08 Sensors and Instruments
 - └ TX08.3 In-Situ Instruments and Sensors
 - └ TX08.3.1 Field and Particle Detectors

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System